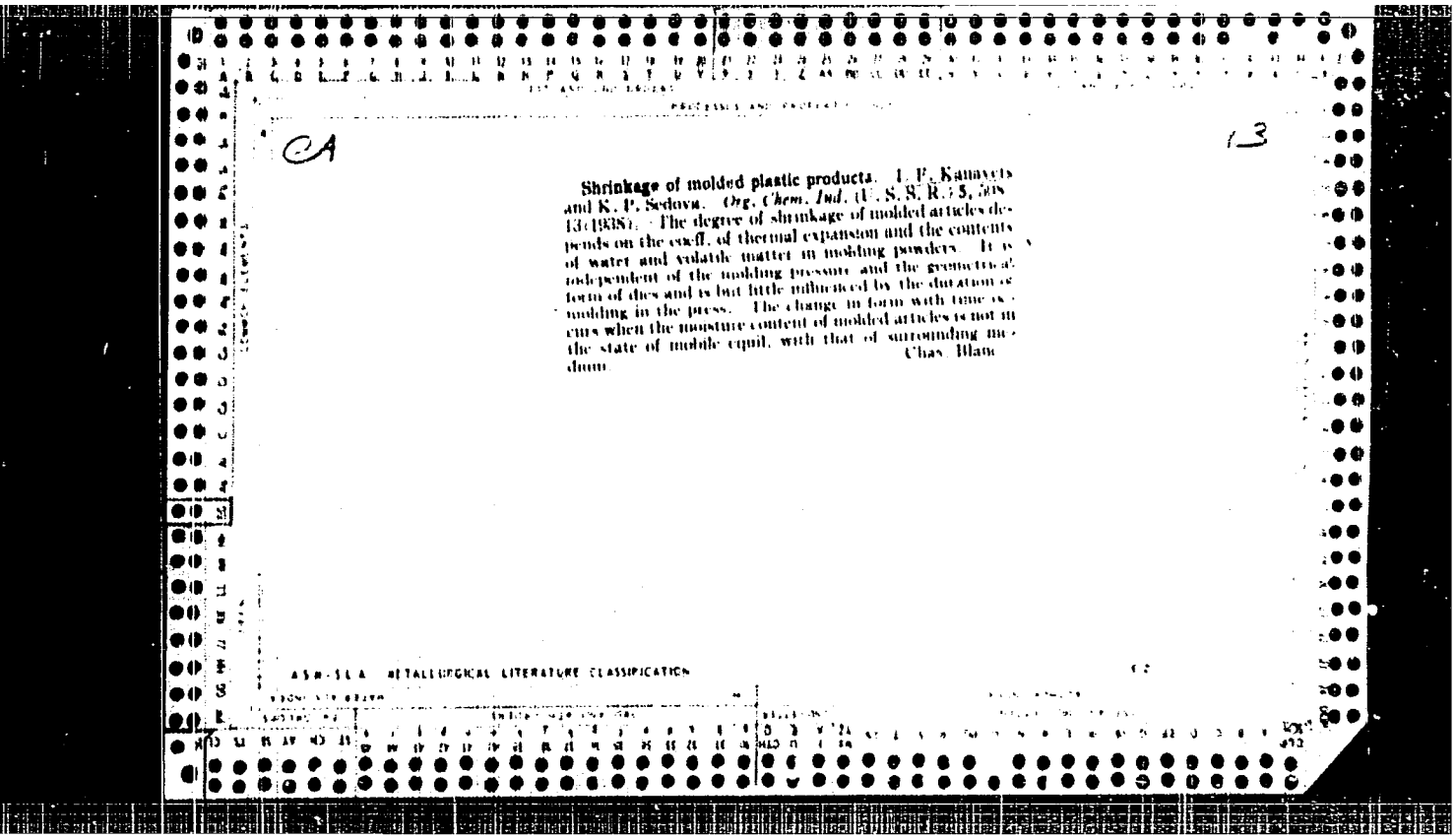

CA

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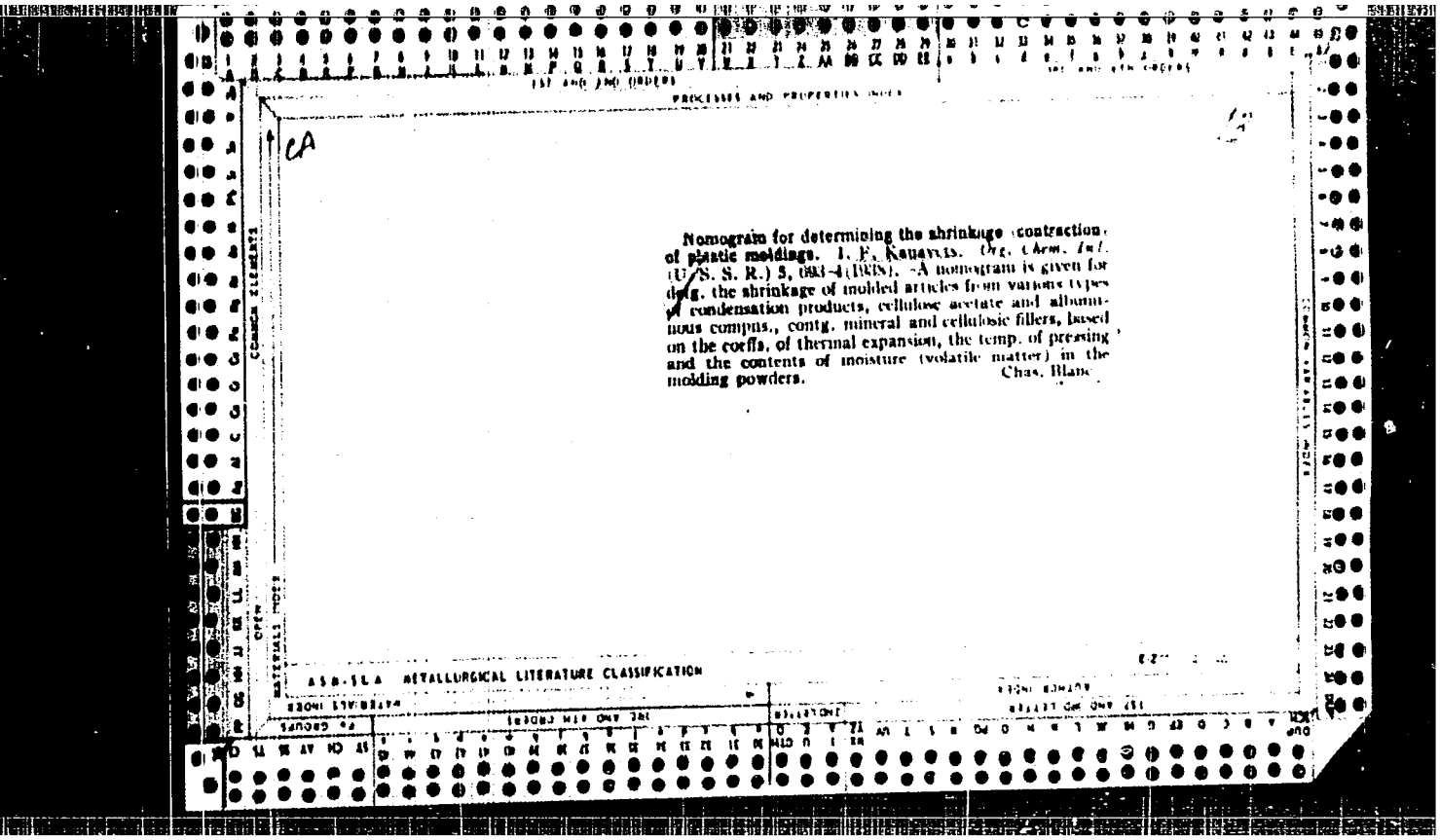
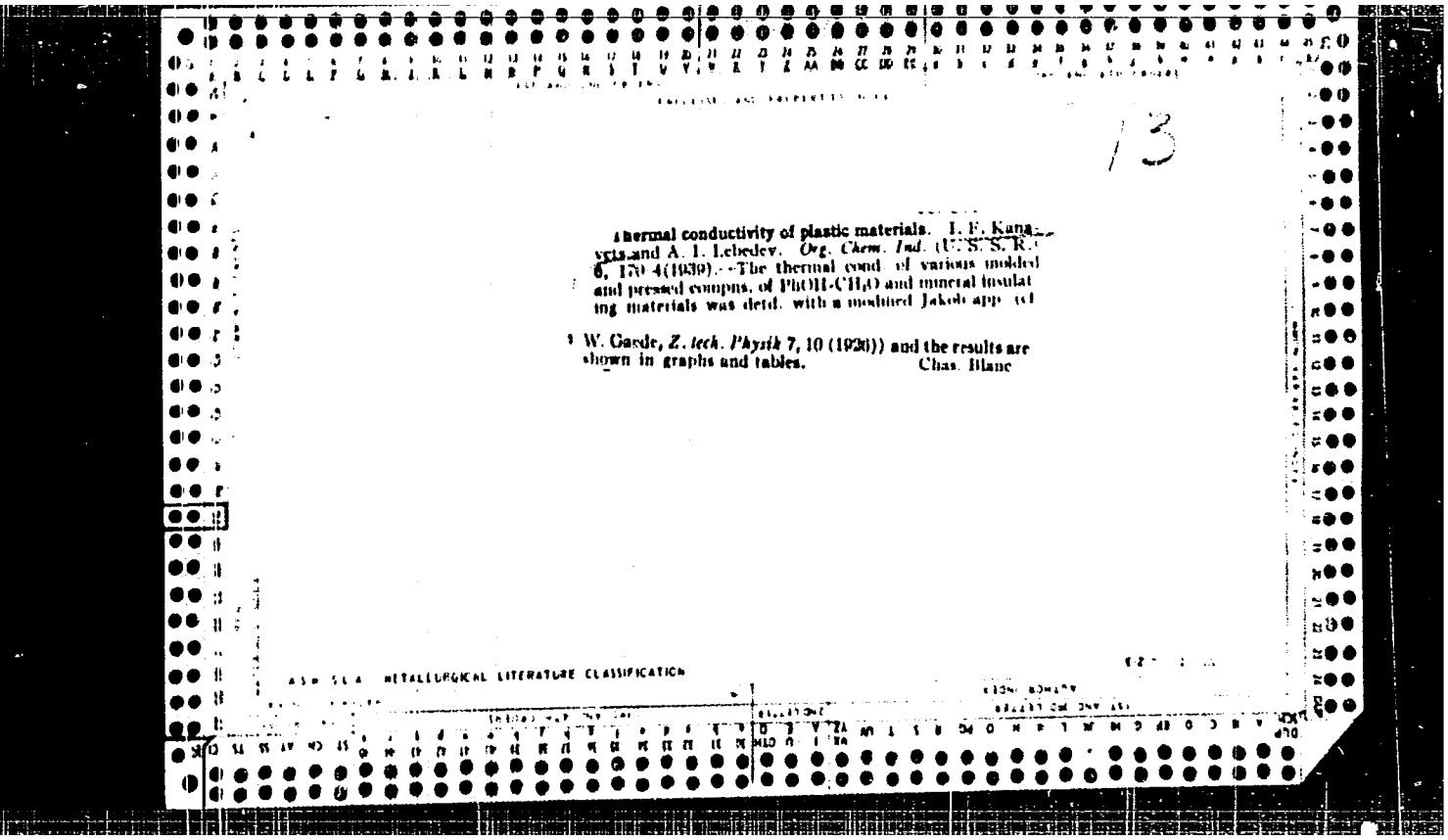
Shrinkage of molded plastic products. I. P. Kainarets and K. P. Sedova. *Org. Chem. Ind.* (U. S. S. R.) 5, 705-13 (1938).—The degree of shrinkage of molded articles depends on the coeff. of thermal expansion and the contents of water and volatile matter in molding powders. It is independent of the molding pressure and the geometrical form of the article and is but little influenced by the duration of molding in the press. The change in form with time occurs when the moisture content of molded articles is not in the state of mobile equil. with that of surrounding me-
dium. Chas. Blanchard

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



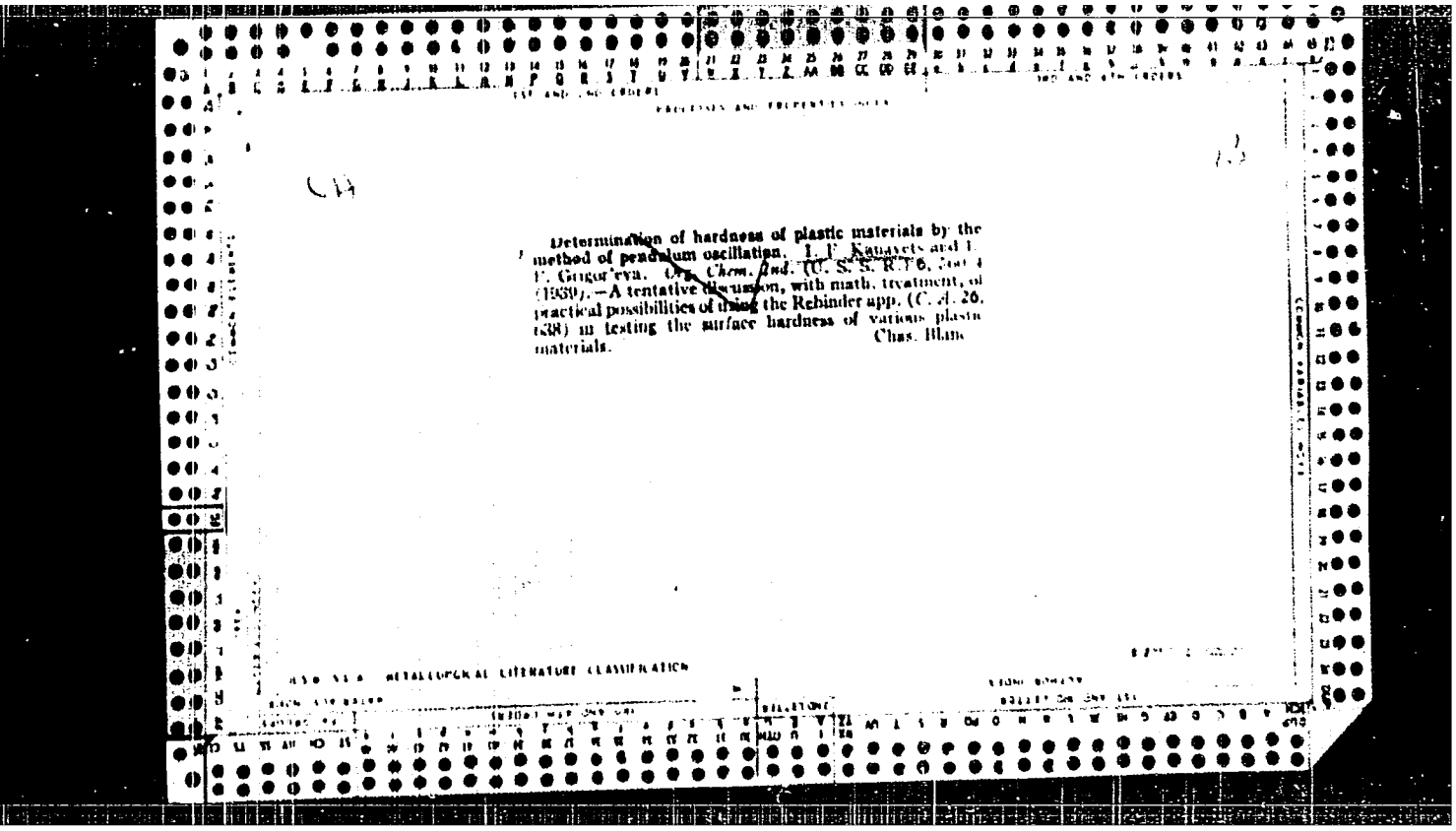
Nomogram for determining the shrinkage (contraction) of plastic moldings. I. F. Kanavets. *Org. Chem. Ind.* (U.S.S.R.) 5, 683–4 (1938). A nomogram is given for detg. the shrinkage of molded articles from various types of condensation products, cellulose acetate and albuminous compns., contg. mineral and cellulosic fillers, based on the coeffs. of thermal expansion, the temp. of pressing and the contents of moisture (volatile matter) in the molding powders.

Chas. Blanc



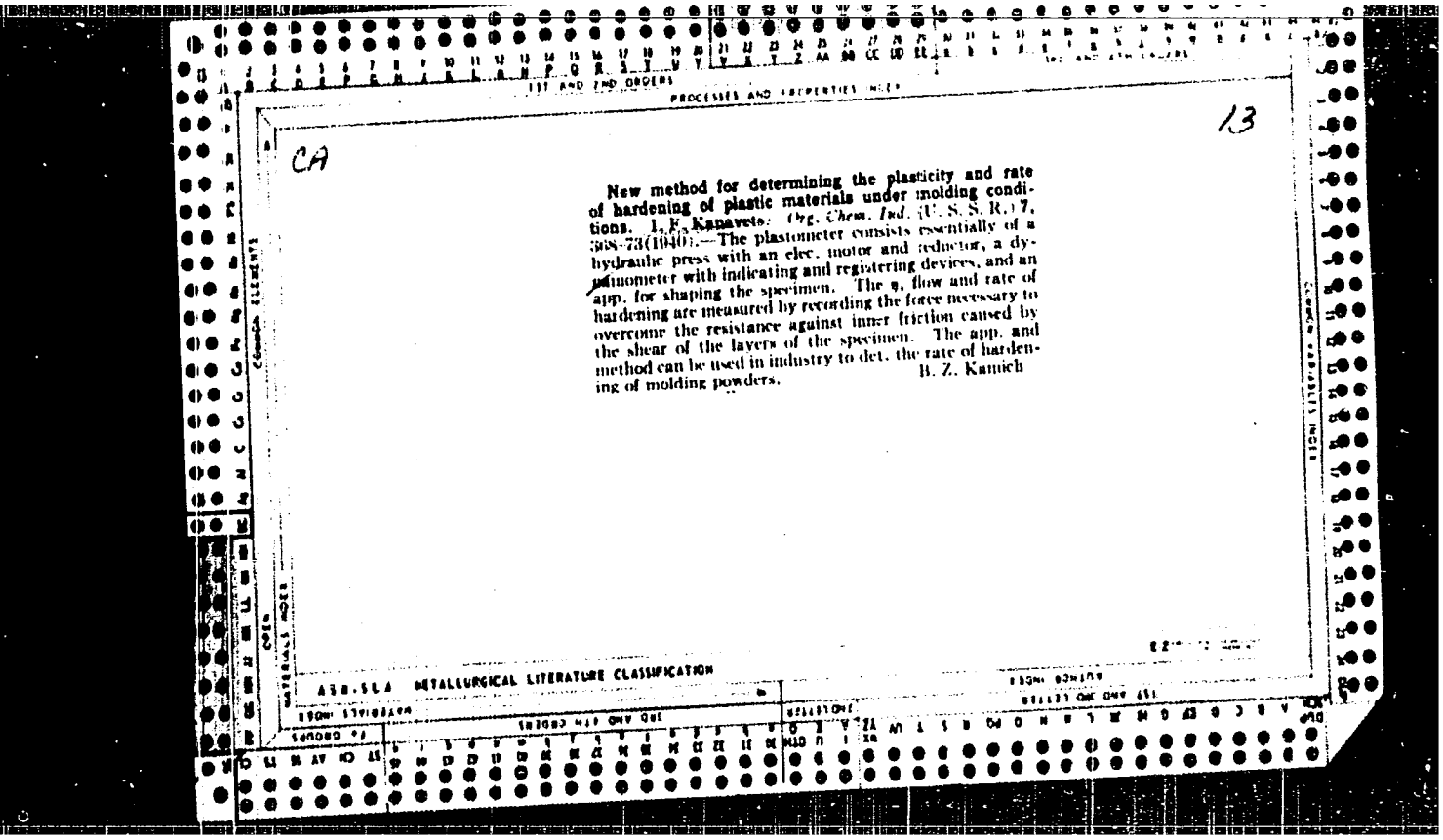
13

Thermal conductivity of plastic materials. I. F. Kuna-yets and A. I. Lebedev. *Org. Chem. Ind.* (U.S.S.R.) 6, 170-4(1939).—The thermal cond. of various molded and pressed compns. of Ph(OH)-CH_2O and mineral insulating materials was detd. with a modified Jakob app. (cf. W. Garde, *Z. tech. Physik* 7, 10 (1930)) and the results are shown in graphs and tables. Chas. Blanc



Determination of hardness of plastic materials by the method of pendulum oscillation. I. P. Kazarets and I. P. Grigor'eva. *Zavodskaya Lab.* (U.S.S.R.) 6, No. 4 (1937).—A tentative discussion, with math. treatment, of practical possibilities of using the Rebinder app. (*C. A.* 26, 638) in testing the surface hardness of various plastic materials.

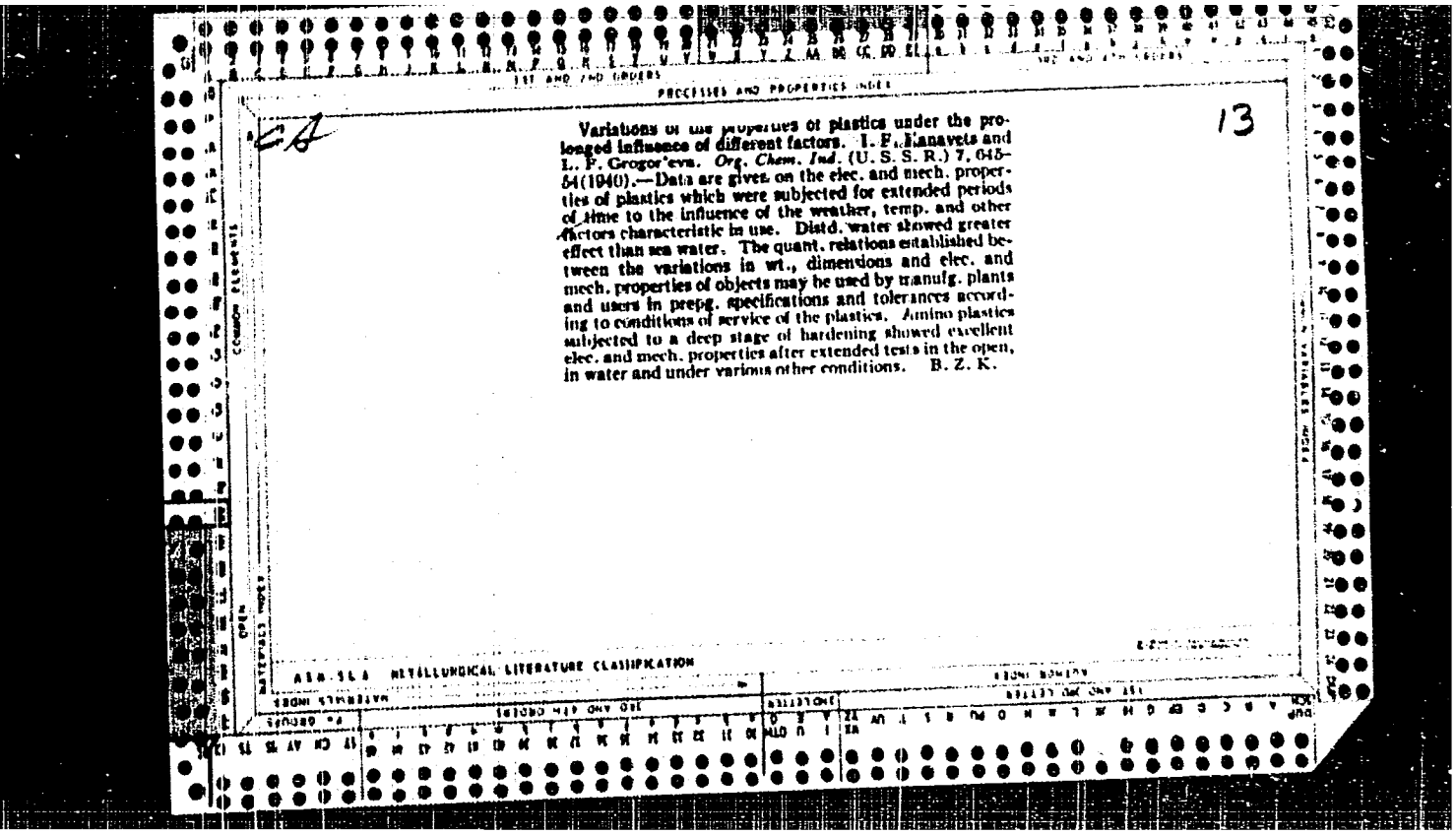
Chas. Blanc



CA

13

New method for determining the plasticity and rate of hardening of plastic materials under molding conditions. I. F. Kanavets. *Org. Chem. Ind.* (U. S. S. R.) 7, 358-73(1940).—The plastometer consists essentially of a hydraulic press with an elec. motor and reductor, a dynamometer with indicating and registering devices, and an app. for shaping the specimen. The η, flow and rate of hardening are measured by recording the force necessary to overcome the resistance against inner friction caused by the shear of the layers of the specimen. The app. and method can be used in industry to det. the rate of hardening of molding powders.
B. Z. Kamich



Variations of the properties of plastics under the prolonged influence of different factors. I. F. Kanavets and L. F. Grogor'eva. *Org. Chem. Ind.* (U. S. S. R.) 7, 645–54(1940).—Data are given on the elec. and mech. properties of plastics which were subjected for extended periods of time to the influence of the weather, temp. and other factors characteristic in use. Distd. water showed greater effect than sea water. The quant. relations established between the variations in wt., dimensions and elec. and mech. properties of objects may be used by manufg. plants and users in prepg. specifications and tolerances according to conditions of service of the plastics. Amino plastics subjected to a deep stage of hardening showed excellent elec. and mech. properties after extended tests in the open, in water and under various other conditions. B. Z. K.

13

KANAVETS, I. F.

Dissertation: "New Method for Determining the Fludity and Solidification Rate of Thermoreactive Plastic Materials." Cand Tech Sci

27 May 49

Moscow Order of Lenin Chemicotechnological Inst imeni D. I. Mendeleyev.

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Sum 71

KANAVETS, I.F. KANAVETS, I. F. FD 167

USSR/Chemistry - Phenolic Plastics

Card 1/1

Author : Kanavets, I. F., and Shelion, A. V.

Title : Changes with use in the physical and mechanical properties of phenolic plastics.

Periodical : Khim. prom. 3, 15-21 (143-149), April-May 1954.

Abstract : Describe on the basis of extensive experimental data the effects of temperature, moisture, and the evaporation of volatile substances on the physical and mechanical properties of objects molded from phenol plastics. Illustrated by 12 graphs. The data are listed in 5 tables. 6 USSR references are appended.

Institution : Scientific Research Institute of Plastics.

KANAVETS, I. F.

USSR/Chemistry - Plastics FD-874

Card 1/1

Author : Kanavets, I. F., Peshekhonov, A. A., Shelion, A. V.

Title : The effect of the weather on the physical and mechanical properties of phenol plastics

Periodical : Khim. prom., No 6, 345-34 (25-29), Sep 1954.

Abstract : Describe the results of an investigation of the stability of phenol-formaldehyde plastics to weather influences depending on the temperature at which pressure molding is carried out and the conditions of molding. Three references, all USSR, one 1940.

Institution : Scientific Research and Planning Institute of Plastics

Submitted :

KANAVETS, I. F.

USSR/Chemistry - Plastics

FD-963

Card 1/1 Pub. 50 - 6/19

Authors : Kovarskaya, B. M., Cand Chem Sci; Kanavets, I. F., Cand Tech Sci; Tsipes, L. Ya., Cand Tech Sci

Title : Quantitative determination of the adhesion of thermosetting pressing composition to the surface of pressure molds

Periodical : Khim. prom., No 7, 410-412 (26-28), Oct-Nov 1954

Abstract : Developed and describe a method of measuring the adhesion of pressing compositions to the mold with the aid of a plastometer designed by Kanavets. Make recommendations for operational procedures which will reduce adhesion. One reference, USSR, since 1940. Four tables, 3 graphs.

Institution : Scientific Research and Planning Institute of Plastics.

KANAVETS I F

USSR/Chemical Technology. Chemical Products and Their Application -- Crude Rubber, natural and synthetic. Vulcanized rubber, I-21

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 6054

Author: Kanavets, I. F.

Institution: None

Title: Testing Methods for Plastics

Original Publication: Zavodskaya laboratoriya, 1954, 20, No 7, 864-867

Abstract: For the purpose of evolving testing methods that are characteristic of high molecular compounds, efficient methods have been worked out for evaluating the technological characteristics of various plastics (P), since the available methods for determining the physico-mechanical properties of P do not permit to measure important characteristics of high polymers (P flow under load, creep and resilient-elastic properties). Putting to use in plant laboratory practices of the methods that have been developed will improve the quality of plastics being manufactured and reduce costs involved in their production.

Card 1/1

KANAVETS, I. P.
USSR/Chemical Technology

Card 1/1

Author : Kanavets, I. P.

Title : About the hardening mechanism of thermo-reactive plastics. (pressed materials)

Periodical : Dokl. AN SSSR, 95, 6, 1271 - 1274, 21 Apr 1954

Abstract : The article describes an experimental study of the hardening mechanism of plastics obtained by pressing thermally reactive powders obtained from resins by a series of transformations. The article contains a table and diagrams.

Institution : Scientific Research Institute of Plastics

Submitted : 26 Feb, 1954

KANAVETS, Ivan Fedorovich, kandidat tekhnicheskikh nauk; UDAL'TSOV, A.N., glavnyy redaktor; BRYANTSEVA, V.P., inzhener, redaktor

[Determination of technological characteristics of thermosetting plastics] Opredelenie tekhnologicheskikh kharakteristik termoreaktivnykh plastikov. Tema no.7, no.I-56-66. Moskva, Akademiia nauk SSSR, 1956. 36 p. (MLRA 10:3)
(Plastics)

KANAVETS, I F

20-5-38/60

AUTHOR KANAVETS, I.F., BATALOVA, L.G.

TITLE The Behaviour of Thermosetting Plastics
(Uprugo-elasticheskiye i vyazko-plasticheskiye svoystva termoreaktivnykh plastmass. Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 114, Nr 5, pp 1053 - 1057(U.S.S.R.)

ABSTRACT The changes of the mechanical properties of thermosetting plastics under the influence of temperature and long-lasting stresses have hitherto not been sufficiently studied. According to present theories on high polymers the closest connection between the structure of the material and its mechanical properties is determined from the measurings of the kinetics of deformation increase of simple displacement after application of a given permanent strain and after the kinetics of deformation decrease after removal of the stress. The authors' investigations were performed with the most important types of plastics produced on the basis of phenol and anilin-formaldehyde resins. The measurements of hardened plastics were performed on an apparatus expressly constructed for this purpose. The constant value with regard to time of the torsional moment was given by a weight on a disk of 100 mm in diameter. The relaxation of strain in the materials and the limitting stress of the shift P_k were measured by a pendulum dynamometer according to the decrease of the deviation of the pendulum in time. Results: 1.) Thermosetting plastics, at normal

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The Behaviour of Thermosetting Plastics

temperature and under the influence of a permanent strain at stresses above the centrifugal limit P_k, undergo also residual deformations. An irreversible deformation was also observed after 15 hours of heating of the sample at 90°C. 2.) In various types of material the stress causes a deformation which is 2 to 3 times greater than the elastic one. 3.) The time of influence of the force reduces the value of restoration of the deformation in the following manner: after 30 seconds this deformation is by 10 % greater in the case of stress as compared with the removal of the stress, after 20 hrs. - 25 %, after 500 hrs. - 50 %. This also indicates a partial break-up of linkages. 4.) Both kinds of deformation increase with increasing temperature of the experiment. Below the temperature of thermal stability (T_c) the elastic deformation remains less than the other one. At temperatures above T_c it sharply increases. 5.) The applied strain after some time does not drop to zero but to a certain boundary-value P_k of a magnitude of from 200 - 250kg/cm². 6.) The limitting stress of the shift P_k, the modulus of the second deformation and the elasticity modulus in semi-logarithmic coordinates in dependence of the inverse value of absolute temperature are described

The Behaviour of Thermosetting Plastics

by two intersecting straight lines. 7.) The fact that at a normal temperature the abnormal deformation is greater than the elastic one, and that its modulus is smaller than the elasticity modulus, indicates a loose structure of the plastics. 8.) The reduction of the modulus of abnormal deformation G_1, of the elasticity modulus G_2, of the viscosity of the plastic η_1 and the viscosity of the elastic flow η_2 (of the relaxation periods τ_1 and τ_2) with increasing temperature is only observed up to the temperature of the thermal stability. For these reasons more solid products may be obtained from thermosetting plastics in case that a greater destruction of the loose structure of resin in the flow is obtained in the deformation of the products than if they are deformed almost without any flow of material.
(With 3 figures, 2 tables, 3 Slavic references).

SOV/138-58-5-7/9

AUTHOR: Kanavets, I.F.,
Lukomskaya, A.I.,
Reznikovskiy, M.M.

TITLE: On the Possibility of Using the Kanavets Displacement Plastometer for Testing Rubber and Plastic Mixtures (O vozmozhnosti primeneniya sdvigovogo plastometra Kanavtsa dlya ispytaniya kauchukov i rezinovykh smesey)

PERIODICAL: Kauchuk i Rezina, 1958, Nr 5, pp 34-36 (USSR)

ABSTRACT: Various devices used for testing the plastic and elastic properties of rubbers and unvulcanised rubber mixtures, such as viscosimeters VR-1 (constructed by NIIShP) and the viscosimeter VR-2 (constructed by "Metallist") as well as others are mentioned (Refs.1-6). The advantages of the Kanavets displacement plastometer, as compared with its other instruments, are discussed. This device is used in the rubber industry for testing rubbers and unvulcanised rubber mixtures and makes it possible to determine their viscosity. The use of this device for ascertaining the capacities of these mixtures for vulcanisation was described by J.V.Weaver and

On the Possibility of Using the Kanavets Displacement Plastometer for Testing Rubber and Plastic Mixtures

A.E.Juve (Refs.10 and 11). Changes in the viscosity of various rubber mixtures (based on different rubbers and fillers) during deformation at 121°C, whilst testing them in the viscosimeter VR (NIIShP) and in the plastometer by Kanavets (NIIPM) are shown in Figures 1 and 2. It was found that the time of relaxation bears no simple relation to the elastic recovery of the mixture. Fig.3. shows the sensitivity of this plastometer to changes in the age of a mix and change in order of combining components of the mix. The different samples of the same mix stabilize at the same viscosity after about 1 minute. When using the Mooney plastometer, the way of preparing the mixtures and especially of rubbers, is very important but this does not apply in the case of the Kanavets plastometer. The constant of viscosity changes with small variations in the content of plasticisers and fillers in the rubber mixtures; this makes it possible to assess the accuracy of composition of the mixture (Fig.4.). The correct proportions of vulcanisation agents and

On the Possibility of Using the Kanavets Displacement Plastometer for Testing Rubber and Plastic Mixtures

accelerators introduced into the mixture can be controlled according to the rate of vulcanisation, i.e. rate of rise in viscosity at temperatures up to 200°C. (Fig.5.). There are 5 figures and 11 references of which 7 are English and 4 Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific-Research Institute for the Tire Industry)

KANAVETS, I. F.: Doc Tech Sci (diss) -- "Investigation of the process of decontamination of thermally active pressing materials from changes in their structural-mechanical properties (in the preparation of pressing powders and their processing to produce parts)". Moscow, 1959. 38 pp (Min Higher Educ USSR, Moscow Order of Lenin Chem-Tech Inst im D. I. Mendeleyev), 200 copies (KL, No 9, 1959, 114)

S/191/60/000/001/013/015
B016/B054

AUTHORS: Kanavets, I. F., Batalova, L. G., Romashova, A. G.

TITLE: Some New Principles for the Rating of Technological Properties of Thermoreactive Molding Materials (Scheme of the ГОСТ(GOST))

PERIODICAL: Plasticheskiye massy, 1960, No. 1, pp. 63-73

TEXT: The present article is meant to be an introduction to the draft of a ГОСТ (GOST) standard on the method of determining the technological characteristics of thermoreactive molding materials (present periodical, pp. 73-78). The authors state that the most important characteristics of these molding materials are closely related with the degree of polycondensation, the polydispersion, and the structure of the resins used. The characteristics are: plasticity, rate of solidification, and structural-mechanical properties of the material in the finished product. The authors consider the hitherto used control methods to be inadequate since they are based on conventional values, not absolute data. For this reason, they

developed a plastometric measuring method to distinguish the processes with predominant growth of the polymeric chains from the processes with predominant structural development. The method permits the production of molding materials with given properties. This is of decisive importance for the mechanization and automation of production. The authors found by the plastometric method that the solidification processes take place as self-inhibiting reactions. Hence, it follows that the material of the finished product has different properties depending on the stage of polycondensation of the resin in the molding powder. By conversion of the resin into a higher stage of polycondensation by means of rolling, it is possible to produce molding powders of higher quality. The testing instrument "Plastometer" of I. F. Kanavets (Fig. 1) described here supplies the required absolute characteristic values (Refs. 1-3). The principle of this measuring method is based on the feed into a preheated mold of the instrument of a weighed portion of the molding material from which the sample is formed. Subsequently, the external part of the mold is set in a rotary mo-

Some New Principles for the Rating of Technological Properties of Thermoreactive Molding Materials (Scheme of the ГОСТ (GOST))

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tion. A shear stress reflecting the kinetics of solidification of the material is formed in the material by the rotation. This shear stress is measured by a dynamometer, or automatically entered in a diagram (Fig. 2). It was found for the first time by this method that the process of solidification of thermoreactive molding materials takes place in two stages. This permits a new kind of rating the plasticity of molding materials during production. The investigations were carried out at the NIIPM (Nauchno-issledovatel'skiy institut plasticheskikh mass, Scientific Research Institute of Plastics). The "Plastometer" of Kanavets permits the determination of all essential technological characteristics in one operation. Besides a considerable improvement of the properties of molding materials, the new measuring method will permit the responsibility for the quality of finished products to be clearly divided between the manufacturing and the processing plants. The authors demand a series production of the measuring instrument which can also be used in other branches of industry (rubber, machines) besides the plastics industry. They mention the TsNIITOP, Gor'kovskiy institut po normirovaniyu tekhnologicheskikh protsessov

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Some New Principles for the Rating of Technological Properties of Thermoreactive Molding Materials (Scheme of the ГОСТ (GOST))

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(Gor'kiy Institute of Standardization of Technological Processes), the Vladimirskiy zavod (Vladimir Works), the zavod "Karbolit" ("Karbolit" Works), the Okhtinskiy khimicheskiy kombinat (Okhta Chemical Combine), the Karacharovskiy zavod (Karacharovskiy Works), the Mezhotraslevyy NTS (Interbranch Council for Science and Technology) of the NIIPM, and the Komitet standartov (Committee on Standards). There are 13 figures, 6 tables, and 7 Soviet references.

Card 4/4

S/191/60/000/002/012/012
B027/B058

AUTHORS: Kanavets, I. F., Batalova, L. G.

TITLE: A New Instrument, the Elastometer for Determining the Structural and Mechanical Properties of Polymer Materials

PERIODICAL: Plasticheskiye massy, 1960, No. 2, pp. 64-72

TEXT: The authors designed a new elastometer for testing polymer materials at various temperatures and rates of load application. Despite its relatively small dimension, this table-mounted instrument permits a sample load of up to 3 t and serves to determine the structural and mechanical properties of pressed materials, such as breaking limit for static bending, hardness, resistance to frost as well as relaxation period, in order to establish suitable processes for drawing and stabilizing of the films. The elastometer mainly consists of a dynamometer with scale, recording drum, reducer, thermostat tank and a table. The instrument is suitable for testing samples of various form as well as films by means of special clamps which prevent loosening of the film. The samples are suspended on a lever connected with the dynamometer; the parts of the instrument are arranged

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A New Instrument, the Elastometer for Determining the Structural and Mechanical Properties of Polymer Materials

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B027/B058

in such a way that the sample together with clamps and rods can be immersed in the thermostat tank and experiments can be conducted in various media and at various temperatures. The device for the deformation of the sample at the same time serves for recording the deformations on the recording drum. A micrometer is mounted either on the drawrods or on the sample for measuring the deformations. The instrument is easy to operate and a distortion of measurements is excluded by the way the micrometer is connected with the drawrod; the load acting on the sample is not transmitted to the frame, thus excluding a measurement distortion by deformation of the frame. The instrument was successfully tested at the NIIPM (Scientific Research Institute of Plastics). P. A. Rebinder is mentioned. There are 13 figures and 8 Soviet references.

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15850

S/191/60/000/003/009/013
B016/B054

AUTHORS: Kanavets, I. F., Batalova, L. G.

TITLE: Method of Determining Heat Resistance of Plastics

PERIODICAL: Plasticheskiye massy, 1960, No. 3, pp. 58 - 63

TEXT: The authors describe their method of determining the properties of thermosetting plastics: heat resistance and temperature at the beginning of decomposition. Besides, they describe a method of determining the transition temperature of thermoplastics into the vitreous and viscous-liquid state. For this purpose, the authors used three types of small specimens (A: two-layer specimen; B: specimen with gradations; C: specimen for sheets). These specimens ensure accurate measurement of shear and elongation deformations at different temperatures, and thus also the determination of the elastic modulus. With the use of these specimens, results are accurate because the specimen does not glide in the holder. The authors' method permits an observation of changes in thermosetting plastics caused by thermal transformations of the polymer, which change the density and effect a shrinkage. In the

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authors' method, the effect of the filler in sheet materials (including glass-reinforced plastics) is reduced to a minimum when determining the heat resistance. This is of great importance to the production of resins capable of withstanding higher temperatures. The authors mention papers by V. A. Kargin (Refs. 1-3), S. N. Zhurkov, I. A. Maygel'dinov, A. I. Marey (Refs. 10-13), and V. V. Tarasov (Refs. 14-16). G.I. Belkina assisted in the experiments. N. V. Shorygina, V. N. Kotrelev, and T. D. Kostryukova supplied resins and polycarbonates. There are 12 figures and 17 Soviet references.

S/191/60/000/004/005/015
B016/B058

AUTHORS: Andrianova, N. V., Batalova, L. G., Kanavets, I. F.

TITLE: Processing of Polyethylene Terephthalate to Film

PERIODICAL: Plasticheskiye massy, 1960, No. 4, pp. 18-27

TEXT: The authors report on the method elaborated by them for the transesterification and polycondensation of dimethyl terephthalate (DMT), from which polyethylene terephthalate (PETP) is produced. The blowing of nitrogen, vapor, or inert gas through the reaction mass is discarded in this process. The polymer obtained by the authors warrants the required film properties. This polymer was synthetized for the first time by V. V. Korshak and collaborators, under the name of "lavsan", by polycondensation of ethylene glycol with terephthalic acid. The film produced by conventional methods loses its amorphous state when heated. This was prevented by the authors by orientation of the amorphous film and by heating it in the orientated state. The authors consider the following points as being the most important problems of the manufacture of films from PETP: 1) determination of the quality of the polymer, warranting a desired quality of the film;

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2) determination of the rate and temperature of extension, as well as the temperature and duration of film stabilization; 3) determination of the degree of orientation and the extension coefficients of the film. For the determination of the structural and mechanical properties of the film, the authors recommend an elastometer (Fig. 1) with special clamps, developed at the NIIPM (Nauchno-issledovatel'skiy institut plasticheskikh mass, Scientific Research Institute of Plastics). The degree of film extension is transferred to a dynamometer and automatically recorded in a diagram. This instrument is described in Ref. 1. From data determined by means of the elastometer, the authors conclude that extension should take place at the highest possible rate and at the lowest possible temperature, for the purpose of increasing the film strength. These two conditions are determined by the stress required for the orientation of the polymer. It is noted that a stress of 80 kg/cm^2 must be applied at the constriction of the cross section of the specimen and one of 300 kg/cm^2 outside this section. The film strength gradually increases in the direction of extension, whereas it decreases perpendicularly to the direction of extension. By extension in two directions perpendicular to each other, the authors therefore obtained equal film strength in both directions. The coefficient of extension

Processing of Polyethylene Terephthalate to Film

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was determined from the change of thickness, surface, and strength of the film produced at various temperatures. The coefficients of extension thus ascertained determine how many times the film is to be extended in both directions on the extension device. The authors further propose a method for determining the applicability of PETP resins for film production. They come to the conclusion that the resin quality is determined by the shear stress or the viscosity of an amorphous film extended at given rate and temperature. Stable film dimensions are obtained by heating at 180°C. Film shrinkage can be prevented by orientation in two directions. As the film cannot be welded, the authors glued it successfully with glue made from polyester of terephthalic and sebacic acids, as well as from ethylene and diethylene glycols. The film may be glued to metal with glue of the type БФ-4 (BF-4). Papers by V. A. Kargin and T. I. Sogolova (Refs. 5-7) are mentioned. There are 17 figures, 3 tables, and 14 references: 11 Soviet, 2 British, and 1 US.

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B016/B058

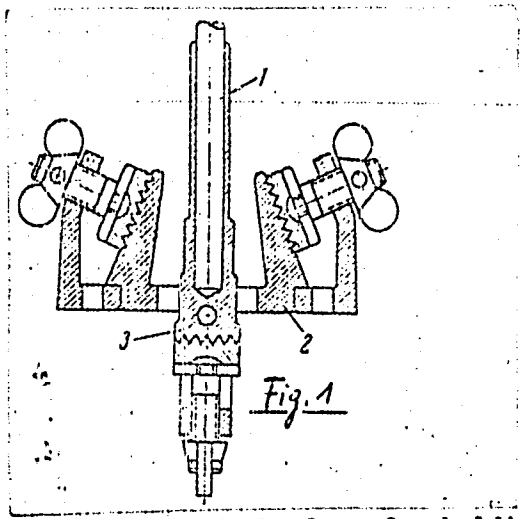

Fig. 1

Legend to Fig. 1: 1 - rod; 2 - clamp for holding the specimen; 3 - film specimen.

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S/191/60/000/006/006/015
B004/B054

5.3832

AUTHORS: Rodivilova, L. A., Batalova, L. G., Vlasova, K. N., Kanavets, I. F.

TITLE: Influence of Length and Type of the Alcohol Side Radical on the Structural and Mechanical Properties of Methylol Polyamides

PERIODICAL: Plasticheskiye massy, 1960, No. 6, pp. 14 - 19

TEXT: The authors refer to previous papers (Refs. 1,2,5) in which they studied polycondensation by measuring the structural and mechanical characteristics of commercial methylol polyamides. The structure of these compounds was as follows: ...-$HN(CH_2)_n\underset{CH_2OH}{N}CO(CH_2)_m CONH(CH_2)_n\underset{CH_2OC_2H_5}{N}CO$-... .

The present paper deals with the influence of alcohols, in the medium of which the polycondensation takes place, and whose radicals are introduced as a side chain into the polymer. Further, the authors studied the hardening process under the action of high temperatures, and the change in

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B004/B054

Influence of Length and Type of the Alcohol Side Radical on the Structural and Mechanical Properties of Methylol Polyamides

mechanical properties by different hardening agents. Fig. 1 indicates the experimental data (deformation as a function of stress) for polyamide films of the type 54/10, and methylol polyamide films of the type ПФЭ-2/10 (PFE-2/10). Both substances contain a crystalline phase. Hardening changes the properties of PFE-2/10 and increases its tensile strength (Fig. 2). The strength of methylol polyamides, in which the ethyl group of the side chain was substituted by CH_3, C_3H_7, $CH_2C_6H_5$, C_4H_9, or $CH_2CH{=}CH_2$, decreased with increasing chain length of the radical, even more so in the case of substitution by allyl- or benzyl radicals (Fig. 3). After hardening by heating to 125-130°C in the presence of acid catalysts (oxalic acid, maleic acid, etc.), however, the films of differently substituted methylol polyamides showed only slight differences in their mechanical properties (Fig. 5). While in unhardened films the modulus of elasticity and the strength decreased if long alcohol molecules were introduced, these characteristics increased after hardening (Fig. 4). Fig. 6 shows the influence of temperature on ПЭС-1 (PES-1) polyester film, Fig. 7 the influence on

S/032/60/026/06/06/044
B010/B126

15.8000

AUTHOR: Kanavets, I. F.

TITLE: Discussion of Methods of Examining and Testing the Physico-mechanical Properties of Plastics. Answers to the Inquiry, Published in No. 1 of the Periodical "Zavodskaya laboratoriya" of 1960

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 6, pp. 676 - 678

TEXT: Different methods of determining the most important technological characteristics of pressed materials were worked out in the author's laboratory (Refs. 1-9). The influence of the conditions of manufacture of the sample on its properties was also examined. A formation of the finished article outside the limits of the viscous condition leads to bad material with reduced physicomechanical properties. Data on the plasticity of pressed materials and the hardening process can be obtained on the plastometer, constructed by the author. The most suitable method of evaluating the structural-mechanical properties of plastics may be that developed by P. A. Rebinder (Refs. 4,10) but the testing machines available are not very

Card 1/2

Discussion of Methods of Examining and Testing the Physicomechanical Properties of Plastics. Answers to the Enquiry, Published in No. 1 of the Periodical "Zavodskaya laboratoriya" of 1960

S/ 32/60/026/06/06/044
B010/B126

suitable. In the author's opinion, the "Dinstat" apparatus is useful, but the bending- and impact resistance values are different from those that are obtained on other machines. The author has built a machine for measuring elasticity, which shows advantages over other machines. Ye. Ye. Glukhov built a machine to test shearing in the author's institute (Ref. 5). The author believes that the Vick and Martens heat resistance test is useless, and he has devised an apparatus to determine heat resistance, that also determines the deformation of pure shearing and the increase in length under load at different temperature (Ref. 11). In order to determine the impact tenacity of plastics, a new pile hammer of the existing type, but with much larger capacity, must be built. The rate of loading on tensile- and bending tests should not be standardized according to the rate of movement of the lower traverses, but according to the rise in load. There are 11 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute for Plastics)

Card 2/2

20485
S/191/61/000/003/003/015
B124/B203

15.8500

AUTHORS: Kanavets, I. F., Grigor'yeva, L. F.

TITLE: Dielectric properties of phenol formaldehyde resins in various stages of hardening

PERIODICAL: Plasticheskiye massy, no. 3, 1961, 15-20

TEXT: The authors investigated novolak resins of brand 18, resols of brand 21-c (21-s), and aniline phenol formaldehyde resols of brand 211. Density, hardness, and water resistance increase with hardening, and the dielectric properties of resins are improved. The electric properties of the various resin types, as well as those of one type in the resol, resito., and resite stages, are different (Table 1). Figs. 1 and 2 show the change in electric properties during hardening; ρ_v changes proportionally with the change in weight, tanδ and ε according to an exponential function. With an increase in the moisture content of the resin, ρ_v drops while tanδ and ε rise. The presence of the NH group effects lower polarity and hygroscopicity of aniline phenol formaldehyde resins as compared with phenol

Card 1/10

formaldehyde resins. The following relation holds for the dependence of volume resistivity on the degree of hardening of resins, on temperature, and the content in volatile components: $\rho_v = (Ax + C)e^{-U/kT}$ (1), where U, A, and C are material constants depending on the chemical nature of the resin and on the production formula (U is the activation energy a charged particle must assume under the action of temperature and electric field to surpass the potential barrier), x is the change in weight within $\pm 3\%$ caused by moisture and volatile components. The activation energy rises from 15.2 kcal/mole/degree in the resol stage to 17.5 in the resitol, and 19.3 kcal/mole/degree in the resite stage. The 21-s resol resin and the novolak 18 resin are characterized by curves rising with temperature for tanδ and ε until reaching a maximum according to the equations: $\tan\delta = B \cdot e^{-U/kT}$ (2) and $\varepsilon = \varepsilon_\infty + B \cdot e^{-2U/kT}$ (3). The change in tanδ of resin 211 as a function of temperature and content in volatile substances in the curve section before passing the maximum is characterized by the equation: $\tan\delta = A(x + a)^n e^{-U/kT}$ (4), where A, a, and n are material

constants. The change in tanδ of resin 18 as dependent on the increase in weight of specimens is given in Table 2. At normal temperature, tanδ and ε up to a field tension of 2 kv/mm do not depend on the latter; at 120°C, they rise with the field tension (Fig. 6). The following equation holds for the breakdown strength of resins in the region of breakdown due to thermal instability (above 60°C): $E = (Mx + C)e^{-\beta(t-t_o)}$ (5), where M, C, and β are material constants, x is the change in weight due to the loss in moisture and volatile components in %, t_o is the temperature at which the breakdown voltage is strongly reduced, and t is the test temperature. The electric strength of resins changes as a function of the change in weight of resins during hardening, and of temperature (Figs. 7 and 8). The electric strengths calculated from Eq. (5) are in good agreement with the value experimentally found for 21-s resins. P. A. Kremlevskiy, S. Ya. Yamanov, I. A. Maygel'dinov, and P. N. Shcherbak are mentioned. There are 8 figures, 3 tables, and 9 Soviet-bloc references.

Dielectric properties of phenol...

Table 1: Electric properties of resins 18, 21-s, and 211 in various stages of hardening at normal temperature

Legend: (1) Resin brand, (2) hardening stage, (3) ohm·cm, (a) more than, (b) (thermoplastic).

Таблица 1

Электрические свойства смол марок 18,21-с и 211 в разных стадиях отверждения при нормальной температуре

(1) Марка смолы	(2) Стадия отверждения	(3) ρ_v ом·см	$tg\delta$	ε	E кв/мм
18	A	$1,1 \cdot 10^{14}$	0,01	5,8—4,6	13,0 (b) (термопласт)
18	B	$1,2 \cdot 10^{14}$	0,01	5,6—3,9	12,2
18	C	(a) Больше $1,3 \cdot 10^{14}$	0,01	3,9—2,9	13,9
21-с	A	$4 \cdot 10^{11}$—$2 \cdot 10^{12}$	0,73—0,23	20,4—11,3	4,2
21-с	B	$2 \cdot 10^{12}$—$4 \cdot 10^{13}$	0,22—0,03	11,1—7,3	5,2—6,3
21-с	C	$4 \cdot 10^{13}$—$6,3 \cdot 10^{13}$	0,03—0,02	7,3—5,1	10,7
211	A	$1,4 \cdot 10^{14}$	0,01	3,7	9,5
211	B	(a) Больше $1,3 \cdot 10^{14}$	0,01	3,6—3,3	10,8
211	C	(a) Больше $1,4 \cdot 10^{14}$	0,01	3,3—3,0	10,9

Table 1

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Dielectric properties of phenol...

Таблица 2

Зависимость tgδ смолы марки 18 от увеличения веса образцов

(1) Увеличение веса, %	(2) Значения tgδ	
	экспериментальные (a)	вычисленные (b)
В состоянии поставки (c)	0,001	0,021
0,5	0,03	0,029
3,0	0,07	0,086
6,7	0,25	0,244

Table 2

Table 2: Dependence of tan δ of resin 18 on the increase in weight of specimens

Legend: (1) Increase in weight, %, (2) values of tan δ, (a) experimental, (b) calculated, (c) state of delivery.

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B124/B203

Dielectric properties of phenol...

Fig. 1: Change of the volume resistivity ϱ_v, of the loss angle tan δ, and of the dielectric constant ε of 21-s resol resin as dependent on the change in weight of specimens in drying and moistening

Legend: (a) Change in weight, %.

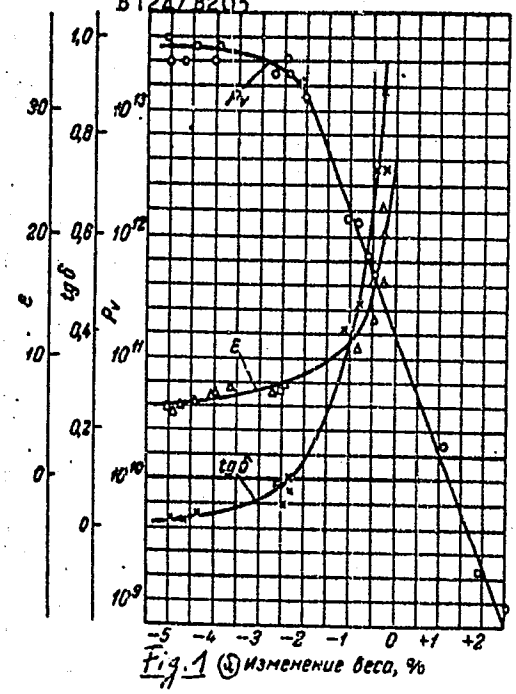

Fig. 1

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B124/B203

Dielectric properties of phenol...

Fig. 2: Change of the volume resistivity ϱ_v, of the loss angle tan δ, and of the dielectric constant ε of novolak 18 resin as dependent on the change in weight of specimens in drying and moistening. —— experimental data; ----- calculated data.

Legend: (a) Change in weight, %.

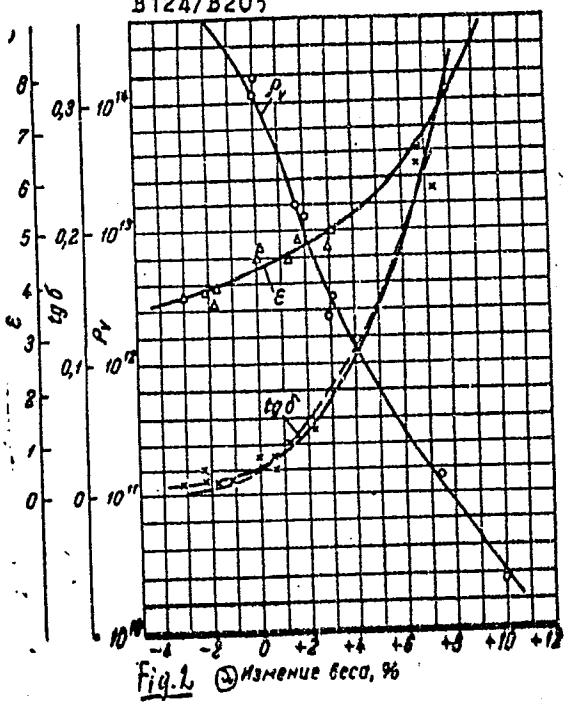

Fig.1. ② Изменение веса, %

Card 7/10

Dielectric properties of phenol...

Fig. 6: Change of the loss angle tan δ of 21-s resol resin as dependent on the electric field tension

Legend: (1) Fusible and soluble resin tested at 20°C, (2) hardened resin tested at 120°C, (3) hardened resin tested at 20°C. (a) voltage, kv/mm.

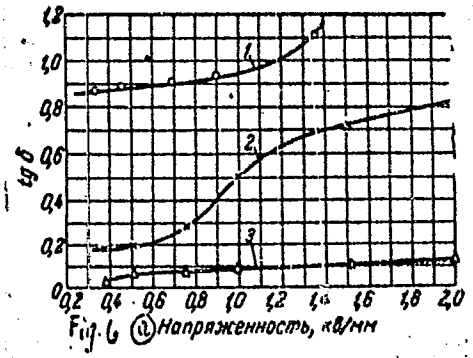

Fig. 6

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Dielectric properties of phenol...

Fig. 7: Change of the mean breakdown voltage

Legend: (a) of 21-s resol resin in various hardening stages as dependent on temperature, (b) the lower curve corresponding to stage "A", the curves of 2 and 3% losses in volatile components to stage "B", and the curve of 4.5% losses in volatile components to stage "C". ——— experimental data; ----- calculated data.

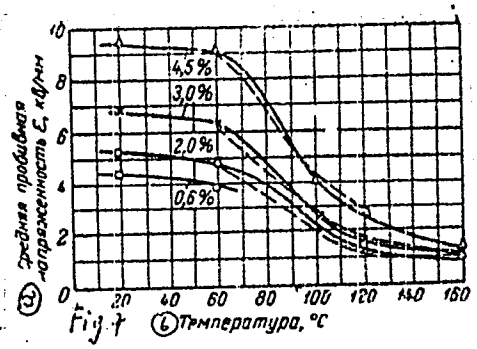

Fig. 7

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Dielectric properties of phenol...

Fig. 8: Dependence of the mean breakdown voltage of novolak 18 and 211 resins on temperature

Legend: (1) thermoplastic resin 18, (2) thermoreactive resin 18, (3) resin 211. Thermoreactive resin 18 was obtained by addition of hexamethylene tetramine. (a) Mean breakdown voltage, kv/mm, (b) temperature, °C.

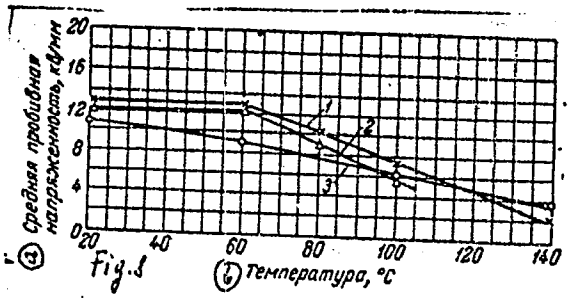

Fig. 8

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SOKOLOV, A.D.; KANAVETS, I.F.

Investigating the processing of thermosetting plastics into finished articles by means of the injection molding method. Plast.massy no.6:23-28 '64. (MIRA 18:4)

KANAVETS, I.F.; GRIGOR'YEVA, L.F.

Dielectric properties of articles made of molding compositions based on phenol-formaldehyde and aniline-phenol-formaldehyde resins. Plast. massy no.6:13-20 '61. (MIRA 14:5)
(Phenol condensation products) (Dielectrics)

S/191/61/000/007/001/010
B101/B215

AUTHORS: Tsvetkov, V. N., Kanavets, I. F., Polikarova, M. P.

TITLE: Study of the swelling process of polyvinyl chloride resins

PERIODICAL: Plasticheskiye massy, no. 7, 1961, 3-8

TEXT: This paper deals with the problem of plasticizing polyvinyl chloride (PVC) resins used for cable insulation. The effect of non-adsorbed plasticizers on the quality of the plasticized resin is discussed. The authors studied processes of swelling to eliminate an excess of the plasticizer and thus increase the efficiency of the extruder. The study was conducted by determining the residual compressibility G of the powdery PVC. G was determined after the resin had been mixed with 30 % of the ВСФ (VSF) plasticizer (phthalate of higher $C_7 - C_9$ alcohols) at room temperature, heated in a thermostat between aluminum plates (maximum layer thickness: 2 mm), and, after swelling, cooled down to room temperature. The plasticized resin (1.2 g) was then filled into a cylindrical container (diameter: 10 mm) and loaded in an elastometer at a linear piston velocity

Card 1/3

Study of the swelling process of...

of 27.5 mm/min, for 8-12 sec up to a maximum of 500 kg/cm^2. As soon as the maximum was reached, the piston was removed and the initial height h_i of the sample was measured with an error of $\pm$ 0.01 mm. After 5 min, the final height h_e was measured. G was calculated from $G = \Delta V/V = 100\ \% (h_i - h_e)/h_i$, where ΔV denotes the change in volume within 5 min at a constant load, and V the volume measured when the load of 500 kg/cm^2 was reached. The mean error was $\pm$ 3%. PVC resins of type ПФ-экст. (PF-spec.), viscosity η = 2.34 and 2.46, ПФ-4 (PF-4), and η = 1.78. All three resins showed comparable results. Non-adsorbed plasticizers had only a slight effect upon the measured value. Two stages are distinguished. The plasticizer first diffuses into the polymer. The viscosity decreases, but the mobility of the polymer chains is still low. Then, swelling sets in and the mobility of the polymer chain increases. The process of swelling varies according to the viscosity and structure of the resin and the various admixtures. The time τ required for heating a resin by a 30 % plasticizer so strongly that G equals 1 %, increases as the initial η of the resin increases. The resins PF-4 had been heated up to 70-100°C, and PF-spec. up to 80-120°C before G was determined. τ decreased as the temperature increased. It was found that τ in PF-4 heated up to 80-90°C is considerably shorter than that

Card 2/3

Study of the swelling process of...

of the standard (2 hr). In PF-spec. heated up to 70°C, swelling does not even stop after 4-6 hr. This resin swells very slowly even at 80°C. Above 100°C, τ of all resins is shorter than the standard time. The time of swelling can therefore be reduced by increasing the temperature in the mixer. The above method of determining G is suited for research work and for quality control of PVC resins. Yu. A. Machikhin is mentioned. The authors thank Ye. Ye. Glukhov for assistance. There are 8 figures, 1 table, and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows:
R. A. Horsley, Plastics Progress, 77 (1957).

Card 3/3

TSVETKOV, V.N.; KANAVETS, I.F.; POLIKANOVA, M.P.

Process of swelling of poly(vinyl chloride) resins. Plast. massy no.7:3-8 '61. (MIRA 14:7)
(Resins, Synthetic) (Ethylene)

S/191/62/000/010/006/010
B101/B186

AUTHORS: Kanavets, I. F., Batalova, L. G.

TITLE: Method of determining the technical properties of thermoplastics

PERIODICAL: Plasticheskiye massy, no. 10, 1962, 27 - 36

TEXT: The Kanavets plastometer (Fig. 1) for determining the characteristics of plastics in absolute physical units with an accuracy of ± 3% is explained. The calibration of the apparatus has already been described (Plast. massy, no. 1 (1960)). The outside part of the mold is caused to rotate, and a belt pulley connects the shaft with the dynamometer. The faces which come into contact the substance to be tested, have grooves (1 mm deep). The apparatus makes it possible to plot graphs of shear stress versus relative deformation, from which the following values are determined: the coefficient η of the effective viscosity in poises, the relative elastic deformation, the relaxation period according to Maxwell, and the viscoelastic recovery. Viscosity is determined much faster and more

Card 1/2

Method of determining ...

exactly from the melt than from solution. The graphs log η versus 1/t show the transition from the vitriform state into the highly elastic and viscous flow states, and the activation energy U can be calculated from $\eta = A \cdot \exp(U/kT)$ where A is a constant. Furthermore, log η is a linear function of the square root of the molecular weight, and η is a linear function of the relative elastic deformation. Examples illustrate the determination of the technical properties of plastics from these characteristics, and the optimum conditions for their processing, aggregation, structuration, or destruction. The plastometer described is stated to be more accurate than Mooney's. It is intended to use the results for developing a commercial plastometer. There are 18 figures and 3 tables.

3617
S/191/62/000/004/008/017
B110/B138

16.6061

AUTHORS: Kanavets, I. F., Batalova, L. G.

TITLE: Method of determining the thermal stability of, and highest permissible processing temperature for, thermoplastics

PERIODICAL: Plasticheskiye massy, no. 4, 1962, 22-27

TEXT: The thermal stability of thermoplastics is best determined from the variation in strength properties of products produced at different casting temperatures. The materials investigated here were Soviet-made polypropylene, foreign isotactic polypropylenes No. 1, and No. 2. The temperature dependence of the viscosity coefficient of the melt, determined by a plastometer, showed a sharp drop at 170-180°C, indicating the fusion of the crystalline polymer phase. An increase from $0.4 \cdot 10^6$ to $1 \cdot 10^6$ poise in the viscosity of fused polymer raises the ultimate tensile stress 1.5 times, the modulus of elasticity twice, and the elastic deformation by 10 %. In injection moulding the strength of the three samples fell with rising temperature. The lower limit of the moulding temperature is about 10°C higher than the temperature of transition to the viscous flow state.

Card 1/2

Method of determining the...

The maximum upper temperature for injection moulding should be such that the strength of the material is not reduced by more than 20 %. At 30°C above the viscous flow transition temperature, the strength falls 10 %, and at 50°C above it, 20 %. As all three samples have viscosity below 10^6 poise, the treatment for preserving optimum properties can be carried out at 10°C above the transition temperature to the viscous-flow state. The optimum temperature must provide uniform strength overall. In the case of polypropylene No. 1 and No. 2 products moulded at 190°C, the tensile strength of parallel and perpendicular pouring streams is almost the same. The strength of welds also corresponds to that of the material. If the pressure is halved and the same pouring temperature maintained, the strength is reduced. The decrease in strength with rising temperature indicates that the rate of thermal decomposition is higher than that of recombination of the decomposed products. The maximum permissible processing temperature is that below which the reduction in strength is not more than 10 %. In Soviet-made polypropylene it was 182°C (15 min), in polypropylene No. 1 it was 250°C (30 min) and in No. 2 it was 208°C (20 min). There are 8 figures and 4 tables.

Card 2/2

KANAVETS, I.F.; BATALOVA, L.G.; Prinimala uchastiye MOKRUSHINA, M.V.

Determination of optimum conditions for processing thermoplastics by compression molding. Plast.massy no.3:18-28 '62. (MIRA 15:4)
(Thermoplastics--Molding)

KANAVETS, I.F.; BATALOVA, L.G.; Prinimala uchastiye: MOKRUSHINA, M.V., laborant

Method of determining the thermal stability and highest permissible temperature for processing thermoplastic materials. Plast.massy no.4:22-27 '62. (MIRA 15:4)
(Plastic--Thermal properties)

KANAVETS, I.F.; BATALOVA, L.G.

Determination of the flow rate of thermoplastics as applied to their processing operations. Plast.massy no.6:23-27 '62.
(MIRA 15:6)
(Plastics--Testing) (Viscosity)

S/653/61/000/000/039/051
I042/I242

AUTHOR: Kanavets, I.F.

TITLE: The processing conditions of thermosetting pressing stock necessary to insure optimal properties of the product

SOURCE: Plastmassy v mashinostroyenii i priborostroyenii. Pervaya resp. nauch.-tekh. konfer. po vopr. prim. plastmass v mashinostr. i priborostr., Kiev, 1959. Kiev, Gostekhizdat, 1961, 420-432

TEXT: The NIIPM has established the dependence of the quality of the final product on the conditions of milling. The method is based on the measurement of the plasticity of the stock at various stages of the milling process by means of plastometer designed by the author. Results of the experiments are shown as plots of shear

Card 1/2

The processing conditions of...

stress as a function of time and relative deformation. Insufficient milling leads to incomplete polymerization of the resin and, hence, to inferior quality of the finished product. Upon heating, the viscous mass sets in two stages determined by the kinetics of condensation. For small-size products, rapidly setting stock should be used. The Gorkovskiy Institut po normirovaniyu tekhnologicheskikh protsessov (Gorky Institute for Standardization of Technological Processes) has compiled a manual for the manufacture of plastic products. A content of moisture and volatile matter exceeding 2% in the product lowers its electrical and mechanical properties and leads to deformation and cracking. The NIIPM has proposed a ГОСТ (GOST) method for the determination of the properties of thermosetting plastics and for the standardization of processing techniques. There are 10 figures and 1 table.

KANAVETS, I.F.; BATALOVA, L.G.

Method of determining the technological properties of thermoplastic materials. Plast.massy no.10:27-36 '62. (MIRA 15:11)
(Plastics--Testing)

SOKOLOV, A.D.; KANAVETS, I.F.

Basic problems of rheology and hydrodynamics in thermosetting injection processes. Plast.massy no.12:21-27 '63. (MIRA 17:2)

L 17473-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS ASD Ps-4/Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3004773 S/0191/63/000/008/0027/0033

AUTHORS: Knyazeva, I. F.; Klas, S. I. 68

TITLE: Method of determining rheological properties of polymer materials

SOURCE: Plasticheskiye massy*, no. 8, 1963, 27-33

TOPIC TAGS: viscosimeter, viscosity, plastic flow resistance, plastic flow rate, plastics, Poiseuille law

ABSTRACT: A method was worked out for measuring the input resistance of the gates and dies to various polymers by the employment of a viscosimeter. The flow resistance with respect to channel length was also measured. The coefficient of effective viscosity can be calculated in accordance with Poiseuille's law. A formula is proposed for calculating the flow rate gradient across the disks. The method can be used to determine dependence of viscosity and flow rate from 0.03 sec^{-1} to 14,000 sec^{-1}. It can also be used to measure the material density and reduction in stress. Orig. art. has: 11 figures, 1 table and 7 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 28Aug63 ENCL: 00

SUB CODE: MA NO REF SOV: 010 OTHER: 002

Card 1/1

MAMEDOV, R.I.; KANAVETS, I.F.

Effect of the injection pressure and speed on the properties of goods made from polypropylene. Plast.massy no.1:27-35 '64.
(MIRA 17:6)

ACCESSION NR: AP4012189 S/0191/64/000/002/0030/0037

AUTHORS: Mamedov, R. I.; Kanavets, I. F.

TITLE: Influence of casting temperature on properties of the product

SOURCE: Plasticheskiye massy*, no. 2, 1964, 30-37

TOPIC TAGS: casting temperature, mechanical stability, polypropylene, pressure, yield point, molecular orientation, density, counter current weld

ABSTRACT: In casting, in order to establish optimum temperature and other parameters, a scientifically valid requirement for obtaining a product was introduced in which the material was equally stable in two mutually perpendicular directions. This involves determination of the optimum mechanical stability of polypropylene and of the possible upper and lower processing temperatures based on the principle for attaining equally stable specimens in two mutually perpendicular directions and the stability of the weld of counter currents. It is possible by this method to evaluate quantitatively the effect of that and other parameters on the properties of the material in the

Card 1/2

ACCESSION NR: AP4012189

product, taking into account the technological properties of the polymer, to establish optimum parameters of processing and to control the process of casting under pressure. The yield point lowers during expansion of the specimens with increase of casting temperature due to a decrease in the degree of molecular orientation, reduction of density of specimens, and thermal decomposition of the material. During casting of polypropylene the weld of counter currents in the product is weaker; to improve it, it is necessary to supply the material through wide channels which guarantee maximum cooling of material during formation. Orig. art. has: 10 Figures, 4 Tables.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: MA NR REF SOV: 007 OTHER: 002

Card 2/2

SOKOLOV, A. D.; KANAVETS, I. F.

Studying the processes of injection molding of thermosetting plastics. Determining the technological conditions of the processing. Plast. massy no. 5: 27-33 '64. (MIRA 17:5)

ACCESSION NR: AP4039945 S/0191/64/000/006/0023/0028

AUTHOR: Sokolov, A. D.; Kanavets, I. F.

TITLE: Investigation of the process of reworking plastics into articles by the method of casting under pressure. Mechano-chemical effects.

SOURCE: Plasticheskiye massy*, no. 6, 1964, 23-28

TOPIC TAGS: pressure casting, plastic, plastic fabrication, mechanical chemical effect, Kanavets plastometer, shear stress, relative deformation, mechanical molecular rupture, viscous flow, chemical flow, hardening rate, curing rate, brittleness, test apparatus

ABSTRACT: The influence of mechano-chemical effects on the properties of plastics was evaluated by quantitative indexes which can be used for controlling the preparation of extruded materials and their reprocessing into articles. Since methods and apparatus used for evaluating plastic properties do not reflect the mechano-chemical effects in the materials, a new method was worked out. The mechanical rupture of the molecule chains during processing causes the development of different chemical reactions initiated by the radicals formed. The plastic

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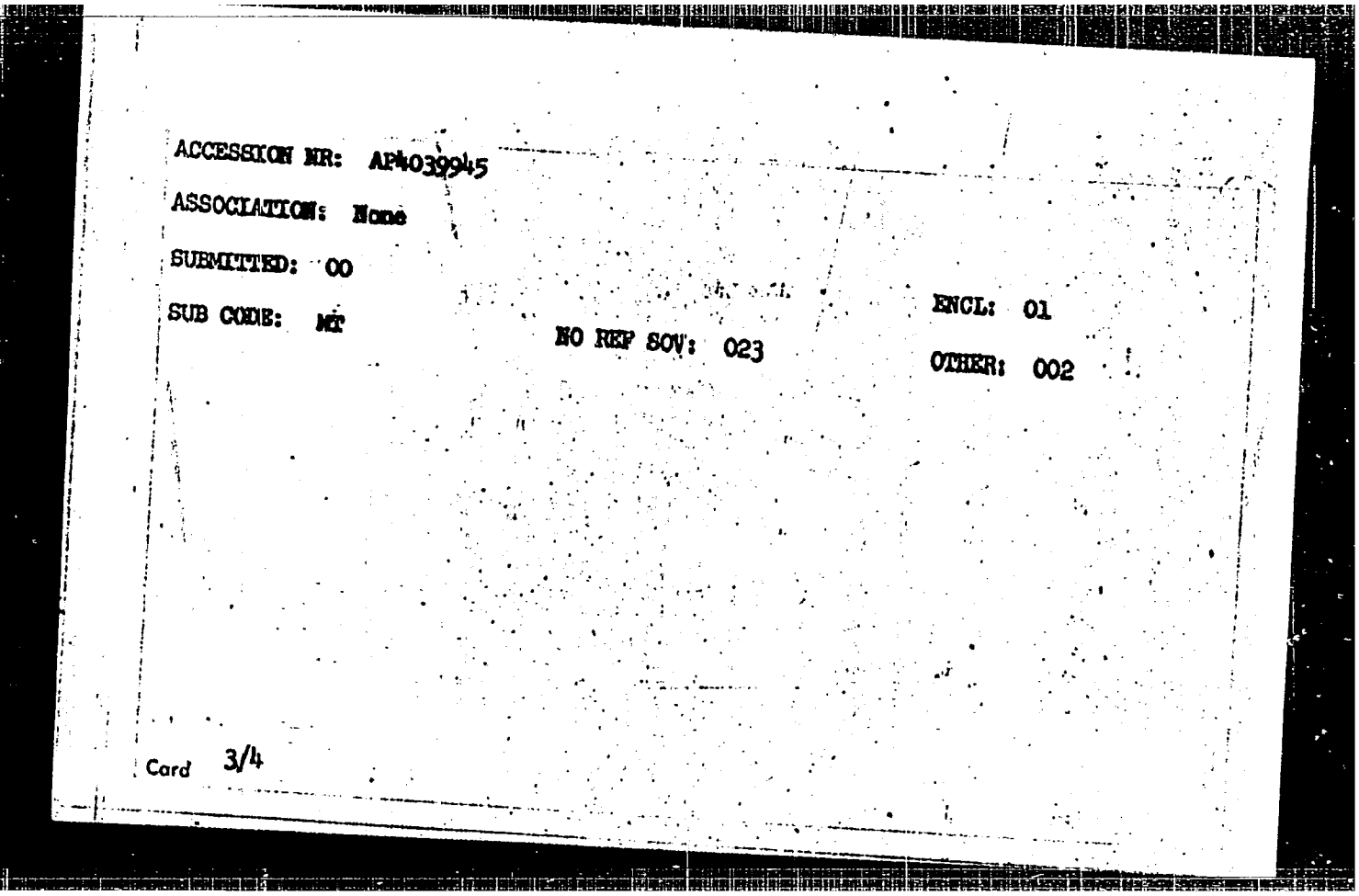
ACCESSION NR: AP4039945

flow during this reprocessing is "viscous" and "chemical flow", their ratio depends on temperature and mechanical effects. These can be evaluated by measuring the time the material is in the viscous state, the rate of hardening, and the structural mechanical properties of the materials. The Kanavets plastometer (fig. 1), designed to subject the materials to significant mechanical stresses simulating the properties of extruded materials subjected to plastic deformation during fabrication, was used in the tests run on K-18-2, K-214-2, K-211-3, and FKPM-15T resins (based on novolac and resol resins, and these resins mixed with rubber, wood and mineral fillers). Measurements of the shear stress and relative deformation of these resins cast under pressure showed they were more brittle than when molded. It was found that flowing the plastic materials in narrow channels with greater speed gradients causes a decrease in the effective viscosity and in the duration of the plastic-viscous state, and an increase in the curing rate. This increased curing rate is desirable since production can be increased, but it is accompanied by undesirable brittleness. The proposed method is suggested for evaluating the technological properties to establish a reasonable pressure for casting conditions. Orig. art. has: 8 figures and 1 table.

Card 2/4



ACCESSION NR: AP4039945

ASSOCIATION: None

SUBMITTED: 00

SUB CODE: ME

NO REF SOV: 023

ENCL: 01

OTHER: 002

Card 3/4

ACCESSION NR: AP4039945

ENCLOSURE: 01

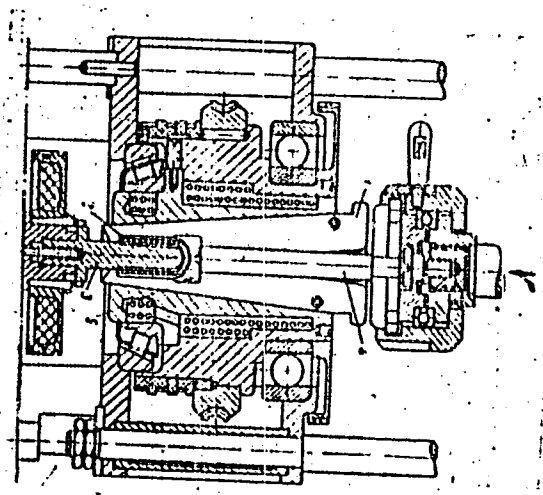


Fig. 1. Operating section of the capillary-rotation plastometer for determining technological properties and ranges of processing plastics by the pressure casting method. 1--detachable mold form; 2--test sample; 3--shaft; 4--plunger; 5--pouring gate.

Card 4/4

ACCESSION NR: AP4035103 S/0191/64/000/005/0027/0033

AUTHORS: Sokolov, A. D.; Kanavets, I. F.

TITLE: Investigation of the processes of treating "reactoplasts" cast under pressure. Determining the technological processing ranges

SOURCE: Plasticheskiye massy*, no. 5, 1964, 27-33

TOPIC TAGS: pressure casting, rheological property, test method, testing apparatus, plastometer, curing rate, flow rate, structural mechanical property, reactoplast, extrusion, calculation, shear stress, modulus of elasticity, heat extruded plastic, plastic state

ABSTRACT: A new method was worked out for evaluating the technological properties of "reactoplasts" simulating pressure casting conditions for forming articles. Using the apparatus shown in the figure, it is possible to determine with 15-20 gm. samples the technological and rheological properties of the heat extruded plastics. Knowing the coefficient of effective viscosity, the time at which the material is in the plastic state after passing through the narrow opening, the curing rate, the gradient of the rate of flow, the shear stress, the molulus of elasticity and strength, it

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is possible to determine rational processing ranges. The basic parameters in pressure casting the plastics (K-18-2, FKP-1, K-114-35, K-214-2, K-211-3 and FKPM-15T) were established and their effect on the kinetics of curing and the structural-mechanical properties was determined. If the flow rate is too slow the material in the article is not uniform, resulting in low strength. Preheating the plastic prior to filling the mold speeds up the operation and improves the physical-mechanical properties of the materials. Based on their prior works (I. F. Kanavets, Otverzhdeniye termoreaktivny*kh pressporoshkov i method rescheta minimal'noy vy*derzhki pri pressovanii izdeliy iz fenoplasts "Curing of heat reactive molding powders and method of calculating minimum holding in molding articles from phenoplasts", Izd. Inst. tekhno. ekonom. inform. AN SSSR, 1957; A. D. Sokolov, Plast. massy*, No. 7 (1963)), the authors worked out a method for calculating holding time in pressure casting plastics which insures a prescribed degree of hardening in articles of any dimension or configuration. The following formula is applied:

$$\frac{t-t_0}{t_c-t_0}=\varphi\left(\frac{at}{R^2}\right)$$

ACCESSION NR: AP4035103

where t = required holding time, t_c = temperature of the mold walls, t_o = 100-120C, original temperature of the material in the mold, $\frac{a\tau}{R^2}$ = Fourier factor, $a = \frac{\lambda}{c\rho}$ = thermal diffusivity coefficient, λ = heat conductivity coefficient, c = heat capacity, R = thickness of article, ρ = density. Graphs showing the relationship between temperature distribution and the Fourier criterion and monograms for determining holding time without accounting for time for filling the molds are given in the references cited. Orig. art. has: 7 figures, 4 equations and 5 tables

ASSOCIATION: None

SUBMITTED: 00 ENCL: 01

SUB CODE: MT NR REF SOV: 009 OTHER: 000

Card 3/4

ACCESSION NR: AP4035103

ENCLOSURE: 01

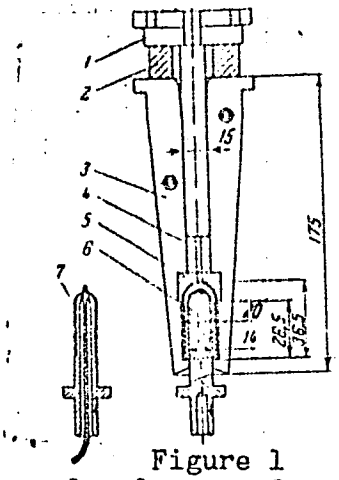

Figure 1

Die for the plastometer. 1--plunger; 2--mantle; 3--split die; 4,5--gates; 6--shaft; 7--shaft with thermocouple for measuring material temperature of emerging from the gates.

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ACCESSION NR: AP4045027 S/0191/64/000/009/0050/0055

AUTHOR: Kanavets, I. F., L. G. Batalova

TITLE: Thermal expansion and compressibility of thermoplasts

SOURCE: Plasticheskiye massy*, no. 9, 1964, 50-55

TOPIC TAGS: thermoplast, thermal expansion, compressibility, polystyrene, polyethylene, polypropylene, polyformaldehyde, poly vinylchloride, polycarbonate, Moplen, Rilsan, Delrin

ABSTRACT: The thermal expansion and compressibility of various thermoplasts, such as polystyrene, low- and high-pressure polyethylene, polypropylene, polycarbonate, polyformaldehyde, Delrin, Rilsan, poly vinylchloride, and polyamide, were investigated; the testing apparatus is illustrated and described. The bulk thermal expansion was measured at a constant pressure of 50 kgs/cm^2 and a heating rate of one degree per minute. The compression was increased relatively slowly, 100 kgs/min. The compressibility was determined after the stable thermal stage at the given experimental temperature had been obtained. A formula is given for the calculation of the coefficient of bulk and linear thermal expansion. The temperature dependence of the linear and bulk expansion and the pressure dependence of the compressibility are plotted, the temperature dependence of the

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ACCESSION NR: AP4045027

true coefficient of linear thermal expansion being obtained by graphical differentiation of the volumetric expansion curve. The bulk thermal expansion was determined at the molding temperature, and the density and thermal expansion values at the molding temperatures are tabulated for 14 plastics. The results show that the compressibility of amorphous and crystalline polymers over a pressure range of 50 - 1200 kgs/cm^2 increases with increasing temperature, especially above the glass temperature. Thus, for low-pressure polyethylene at 100 C and a pressure of 500 kgs/cm^2, the compressibility is about 0.5% while at 150 C it is about 3%. Under the same conditions, the compressibility of Moplen is doubled, and that of Delrin is increased 700%. The compressibility of Delrin at 200 - 250 kgs/cm^2 is about 6%, and at a pressure of 500 kgs/cm^2 it is 7.5%. There is a great difference between the compressibility of polyamide 68 and Rilsan. The addition of a filler decreases the thermal expansion by 0.9%. The mechanism of thermal expansion and compressibility is discussed in relation to polymer structure. This method is a development of a widely used thermomechanical method and can be used for measuring the compressibility of polymers and molding compounds in the viscous state. By using the density values of thermoplasts at room temperature and the established temperature dependence of the thermal expansion, the density of thermoplasts can be determined at any temperature ranging from room temperature to molding temperature. It appears that the

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ACCESSION NR: AP4045027

compressibility of thermoplasts during die casting compensates only in part for the bulk thermal expansion. "G. P. Batalov took part in the experimental work." Orig. art. has: 17 figures, 1 table and 3 formulas.

ASSOCIATION: None

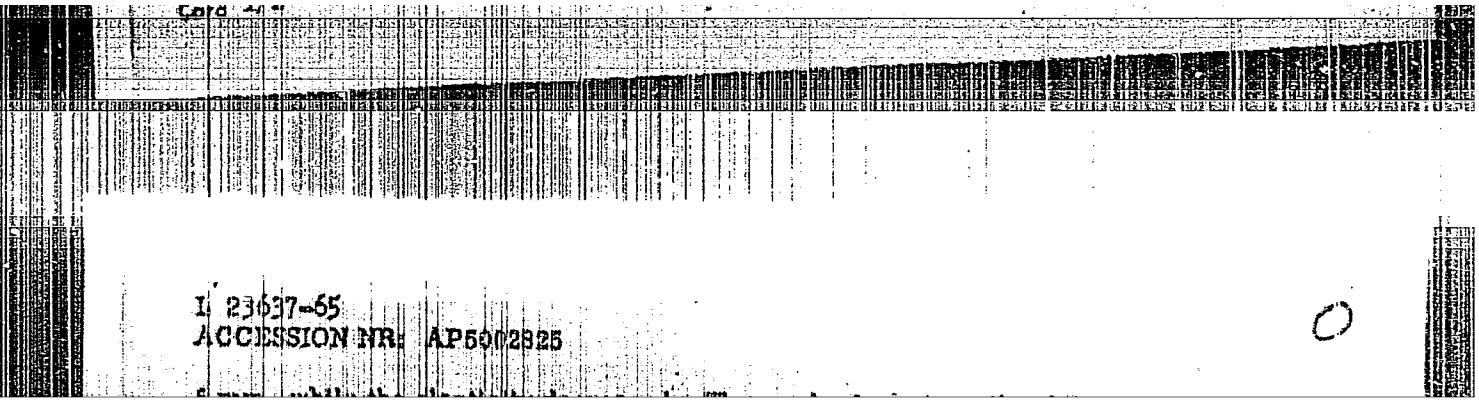
SUBMITTED: 00 ENCL: 00 SUB CODE: MT

NO REF SOV: 010 OTHER: 001

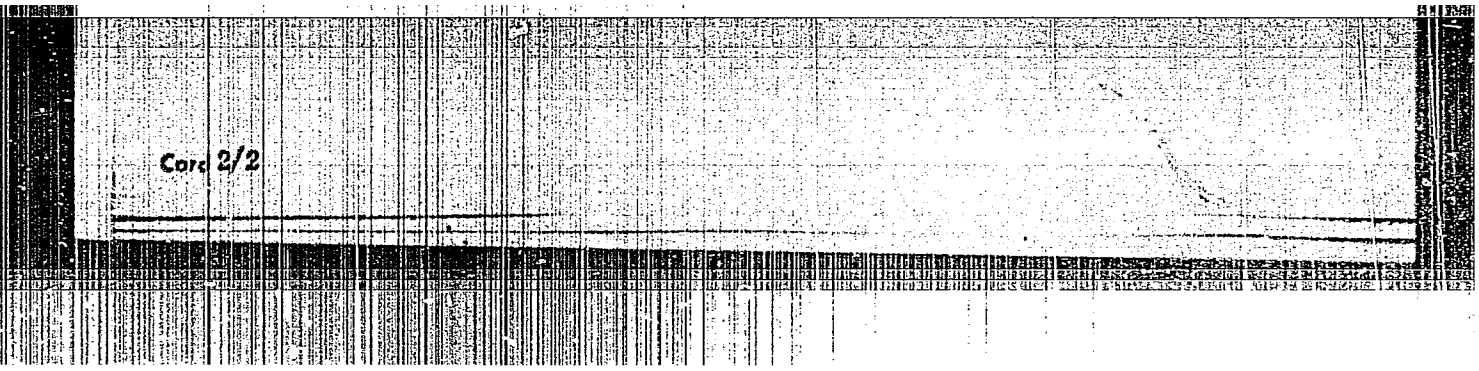
Card 3/3

KANAVETS, I.F.; KLAZ, S.I.

Significance of the rheological characteristics and extrusion conditions of thermoplastics for the design of the forming channels. Plast.massy no.10:21-29 '64. (MIRA 17:10)



APPROVED FOR RELEASE: 08/10/2001 CIA-RDP86-00513R000620320015-2"



APPROVED FOR RELEASE: 08/10/2001 CIA-RDP86-00513R000620320015-2"

ABRAMOV, V.V.; KANAVETS, I.F.; MAMEDOV, R.I.

Investigating the conditions of the injection molding of thermoplastics with the use of composite molds. Plast. massy no.7:30-34 '65.
(MIRA 18:7)

L 11603-66 EWT(m)/T/EWP(j) DJ/RM

ACC NR: AP6001502 (A) SOURCE CODE: UR/0191/65/000/012/0045/0051

AUTHORS: Kanavets, I. F.; Andrianova, L. D.; Zuyev, A. P

ORG: none

TITLE: Evaluation of friction and wear of plastic frictional materials

SOURCE: Plasticheskiye massy, no. 12, 1965, 45-51

TOPIC TAGS: friction, friction coefficient, phenolic plastic, polyformaldehyde plastic / K-217-57 resin, K-F-3 resin, K-F-3M resin, K-248-58 resin, K-248-58N resin, K-248-58S resin

ABSTRACT: The resistance to wear and the coefficient of friction of plastic frictional materials differing in the content of binding substances, fillers, and additives were evaluated from data obtained in the laboratory, testing units, and in full scale experiments on a heavy duty friction tester. The investigated materials were: synthetic rubber-based and phenolic-formaldehyde resins K-217-57, K-F-3, K-F-3M, K-248-58, K-248-58N, and K-248-58S. The last two were K-248-58 improved by adding 5% of polar additives. A simple disk-type laboratory machine is suggested for rapid evaluating of the quality of friction materials. The main advantage of the machine is its ability to change the equipment temperature and to provide large changes of contact temperature on the friction surface by regulating the temperature

Card 1/2 UDC: 678.01:539.53

L 11608-66
ACC NR: AP6001502

of friction disks. Graphs showing wear and friction force as functions of pressure, coefficient of friction as a function of temperature, and wear as a function of friction coefficient are shown. It was established that the wear of plastic friction materials is not a direct function of mechanical characteristics of the material itself, as the properties of the material on the friction surface change greatly. Ye. Ye. Glukhov participated in construction of the experimental testing machine. Orig. art. has: 7 figures, 3 tables, and 3 equations.

SUB CODE: 07/ SUBM DATE: none/ ORIG REF: 013

TS
Card 2/2

ABRAMOV, V.V.; KAMENETS, I.F.

Anisotropy of the shrinkage of thermoplastic goods manufactured by injection molding. Plast. massy no.2:23-26 '66.
(MIRA 19:2)

L 47007-66 EWT(m)/EWP(j)/T IJP(c) WW/RM
ACC NR: AP6027282 (A) SOURCE CODE: UR/0191/66/000/008/0042/0045

AUTHOR: Abramov, V. V.; Kanavets, I. F.

ORG: none

TITLE: Dependence of the cracking resistance of polyethylene articles on the injection molding conditions

SOURCE: Plasticheskiye massy, no. 8, 1966, 43-45

TOPIC TAGS: pressure casting, polyethylene, crack propagation

ABSTRACT: The paper discusses the use of surface active agents in processing polyethylene for the purpose of preparing stable articles under atmospheric conditions and in noncorrosive media. By changing the technological parameters of the molding, one can change the supermolecular structure and decrease the internal stresses in the articles, thus increasing their resistance to cracking. A method was developed for evaluating the cracking resistance without the use of a load in order to check the conditions employed in the injection molding of polyethylene. In addition, the effects of casting temperature, injection pressure, mold temperature and subsequent annealing of the specimens obtained on the cracking resistance were determined. In unloaded articles with internal stresses, the cracks are propagated in the direction of orientation of the polymer macromolecules. A frozen orientation in the thin layer on the surface of the article, caused by a low mold temperature, decreases the cracking resistance.

Card 1/2 UDC: 678.742.2.06.019.133:678.027.74

L 47007-66
ACC NR: AP6027282

The latter is also substantially reduced by a processing temperature which causes a partial thermal degradation of the polymer. The action of surface active agents was found to be a sufficiently sensitive method for evaluating the optimum processing conditions. When heat treatment is used for removing stresses in the outer layers, the conditions employed should be such that the degree of crystallization of the polymer is not appreciably increased. Orig. art. has: 2 figures and 4 tables.

SUB CODE: 11/ ORIG REF: 007/ OTH REF: 005

Card 2/2 vmb

KANAVETS, L. N.

KANAVETS, L. N. -- "Electrical Resistance of the Skin in an Affection of the Peripheral Nervous System (in Connection With Balneological Treatment)." Sub 18 Nov 52, Central Inst for the Advanced Training of Physicians. (Dissertation for the Degree of Candidate in Medical Sciences).

SO: Vechernaya Moskva January-December 1952

CHETVERIKOV, N.S., professor; KANAVETS, L.N., kandidat meditsinskikh nauk

Neuroses and their therapy in sanatoria and health resorts. Sov. med. 18 no.11:5-10 N '54. (MLRA 7:12)

1. Iz Tsentral'nogo instituta kurortologii Ministerstva zdravookhraneniya SSSR.

(NEUROSES, therapy
sanatoria & health resorts)
(HEALTH RESORTS
ther. value in neuroses)
(SANATORIA
neuroses ther.)

KANAVETS, L.N.

Studying the conditioned response component in the mechanism of the action of balneological factors. Zhur.nevr. i psikh. Supplement: 43 '57. (MIRA 11:1)

1. TSentral'nyy institut kurortologii Ministerstva zdravookhraneniya RSFSR (dir. - kandidat meditsinskikh nauk G.N.Pospelova), Moskva.

(CONDITIONED RESPONSE) (HYDROTHERAPY)

EXCERPTA MEDICA Sec 18 Vol 3/7 Cardio. Dis. July 59

1736. **Differentiated balneotherapy in neuroses (Russian text)** KANAVETS L. N. *Vopr. Kurort.* 1958, 4 (298—305) Graphs 5

dg nevrologicheskog otdelenija, Tsentral'nogo instituta kurortologii

When prescribing balneotherapy for neurotic patients one must pay attention to the type of neurosis, to the features of their higher nervous processes, and to the characteristics of the factors involved in the spa therapy. The therapy seems to act as a stimulator of varying degree, mediated reflexly. The existence of a conditioned reflex component in the action mechanism of the spa factors was established, which might serve as an index as to the participation of higher nervous centres in the balneological reaction. The optimal concentration of hydrogen sulphide and radon baths was established for each of 4 groups of patients with neuroses, viz.: (1) In patients with the hypersthenic form of neurasthenia the best effect is seen with general radon baths at a concentration of 100—200 Mache units and with hydrogen sulphide baths at concentration 100 mg./l. (2) For patients with a transitional form of neurasthenia, the same baths at lower concentrations (100 Mache units and 50—100 mg./l.). (3) For patients with the hyposthenic form of neurasthenia, the same baths at 100 Mache units and 25-50 mg./l.; if the above concentrations are exceeded the patient's general condition deteriorates and anomalous vascular reactions develop. (4) For patients with hysteria an optimal effect is seen with concentration of 100 Mache units and 50—100 mg./l. Radon and hydrogen sulphide baths in the above-stated concentrations produce in neurosis cases a mainly inhibitory effect, having a therapeutico-conservational influence. The following prescriptions for radon and hydrogen sulphide baths are advocated as appropriate to the various kinds of neuroses: (1) Hypersthenic form of neurasthenia: (a) radon baths at 100–200 Mache units, temp. 37–36–35° C., duration 10–20 min., 3–4 times per week, a course comprising 14–16 baths; (b) general hydrogen sulphide baths at concentration 100 mg./l., local baths (half baths, four-chamber) at concentration 150 mg./l., temp. 37–36° C., duration 8–15 min., 12–14 sessions for a course. (2) Transitional form of neurasthenia and hysteria: (a) radon baths at 100 Mache units, temp. 37–36° C., duration 10–15 min., 3 times per week, 12–14 sessions for a course; (b) general hydrogen sulphide baths at concentration 50–100 mg./L, duration from [illegible] to 10–12 min., 10–12 sessions for a course. (3) Hy[illegible]

KANAVETS, Lidiya Nikolayevna; DMITRIYEVA, N.M., red.; BUL'DYAYEV, N.A., tekhn. red.

[Neuroses and their sanatorium-health resort treatment]Nevrozy i ikh sanatorno-kurortnoe lechenie. Moskva, Medgiz, 1962. 213 p. (MIRA 15:9)
(HEALTH RESORTS, WATERING-PLACES, ETC.)
(NEUROSES)

KANAVETS, L.N.; SPIRIDONOVA, F.V.; MEL'NITSKAYA, Z.S.; IL'ICHEVA, Ye.M.
LYUDVINSKAYA, P.F.

Effect of climatic factors on some vegetative reflexes in patients with neyrasthenia under the accustomed conditions of the central belt. Vop.kur., fizioter. i lech. fiz. kul't. 28 no.2:108-115 Mr-Ap'63. (MIRA 16:9)

1. Iz Tsentral'nogo instituta kurortologii i fizioterapii (dir.-kand.med. nauk G.N.Pospelova).

KANAVETS, O. L.

see KANAVETS,KAKOVIEVA, O. L.

KANAVETS, P. I.

USSR/ Mining - Chemical technology

Card 1/2 Pub. 22 - 35/51

Authors : Titov, N. G.; Khrisanfova, A. I.; Kanavets, P. I.; and Smirnov, R. N.

Title : Certain properties of coal, dangerous on account of sudden discharges

Periodical : Dok. AN SSSR 101/2, 327-329, Mar 11, 1955

Abstract : Certain chemical characteristics of coal considered dangerous on account of sudden discharges of coal and gas are analyzed. Chemical and thermographic investigations showed that not all coal layers have a high peroxide number and exothermal effects characteristic for the decomposition of peroxides. Considered dangerous are such coal layers as contain large amounts of peroxides.

Institution : ....

Presented by: Academician A. A. Skochinskiy, December 3, 1954

Periodical : Dok. AN SSSR 101/2, 327-329, Mar 11, 1955

Card 2/2 Pub. 22 - 35/51

Abstract : The heat liberated during decomposition of labile peroxides as well as CO_2, CO and H_2O cause intensive desorption of gases absorbed by the coal, thus initiating a gas discharge. A method of neutralizing dangerous coal layers underground is recommended. Eight references: 5 USSR and 3 English (1897-1953). Table graphs.

KANAVETS, P. I.

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Solid Mineral Fuels, I-12

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62509

Author: Titov, N. G., Khrisanfova, A. I., Kanavets, P. I., Smirnov, R. N.

Institution: None

Title: Characteristics of Coal Involving Potential Hazards of Sudden Flareback

Original Periodical: Khimiya i tekhnologiya topliva, 1956, No 1, 43-49

Abstract: Investigation of coal samples from 16 seams of the Donets fields was conducted by thermographic analysis, determination of microhardness andheat of damping and also of peroxide number. It is shown that coal from different blocks of the same seam differs in physical chemical and physicochemical properties as well as in composition and content of peroxides (P). On heating of P containing coal there is observed occurrence of exothermic effects at relatively low temperatures (even at 36°), which is due to decomposition of P,

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USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Solid Mineral Fuels, I-12

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62509

Abstract: the latter being associated with evolution of heat and changes in surface characteristics of the coal and is capable of inducing intensive desorption of the sorbed gases throughout the entire bulk of the coal that may constitute a cause of flareback. The conclusion is reached that coal involving greatest hazards of flareback must be that of low moisture and high P content having a low temperature of decomposition.

Card 2/2

SOV/24-58-5-27/31

AUTHORS: Zhdankovich, L. N. and Kanavets, P. I. (Moscow)

TITLE: Granulation of Fine Classes of Coal from the Irkutsk Basin for the Purpose of Producing Coke From Them (Granulirovaniye melkikh klassov ugley Irkutskogo basseyna s tsel'yu polucheniya iz nikh koksa)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 5, pp 133-136 (USSR)

ABSTRACT: Experiments are described which were aimed at obtaining metallurgical coke from coal of Irkutsk origin, which was granulated by means of a roller on a disc-type granulator, without using any binding substances. The method consisted of feeding the coal, which was crushed to specified dimensions, into the rotating pot of a disc-type granulator and feeding simultaneously water in the form of a fine spray. The obtained granules had a humidity of 10 to 16% and were then dried. After drying, the granules were subjected to coking and nearly spherical coke particles of uniform dimensions were obtained. Data on the used coal, on the coking regime and on the composition of the charge are given. It was established that the coke produced by means of this method has considerably higher strength and gas permeability than that produced by

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Granulation of Fine Classes of Coal from the Irkutsk Basin for the Purpose of Producing Coke From Them

ordinary methods. It is difficult to compare the obtained test results since the produced coke is nearly spherical and, therefore, is less liable to become broken up in the drum. This is undoubtedly an advantage in the process of transportation of the coke as well as in the charging and operation of the blast furnace. The obtained data lead to the conclusion that this method can be usefully applied also for gas and other coal with poor coking qualities.
There are 4 tables and 8 references, all of which are Soviet.

SUBMITTED: October 14, 1957